

0651P AQURON CONCRETE SUBSTRATE TREATMENT IN RESILIENT FINISHES

Branded worksection

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Worksection abstract

This branded worksection *Template* is applicable to the use of AQURON 2000 HYDROGEL as a treatment to concrete substrates with resilient sheet and tile finishes with associated underlay including cork tiles, linoleum, corklinoleum, rubber, polyvinyl chloride (PVC), flexible terrazzo tiles and static control flooring above. It also includes synthetic sporting surfaces.

Guidance text

All text within these boxes is provided as guidance for developing this worksection and should not form part of the final specification. This *Guidance* text may be hidden or deleted from the document using the NATSPEC Toolbar or the hidden text *Hide* and *Delete* functions of your word processing system. For additional information visit FAQs at www.natspec.com.au.

Optional style text

Text in this font (blue with a grey background) covers items specified less frequently. It is provided for incorporation into *Normal* style text where it is applicable to a project.

Related material located elsewhere in NATSPEC

If a listed worksection is not part of your subscription package and you wish to purchase it, contact NATSPEC.

Related material may be found in other worksections. See for example:

0310p AQURON 1000 HYDROGEL in concrete - combined.

0310p CONQOR B52 HYBRID-HYDROGEL in concrete – combined.

0315 Concrete finishes.

0325p AQURON 7000 HYDROGEL concrete protection.

0383 Sheet flooring and decking.

0541 Access floors.

0652 Carpets.

0656 Floor sanding and finishing.

0657 Resin based seamless flooring.

0822 Wastewater.

Material not provided by MARKHAM GLOBAL

This branded worksection *Template* includes generic material which may not be provided by the Product Partner including:

- Underlays.
- Adhesives.
- Sheets and tiles.
- Synthetic sporting surfaces.

Documenting this and related work

You may document this and related work as follows:

- Show on drawings areas of concrete substrate that require treatment using AQURON 2000 HYDROGEL.
- Nominate the locations of finishes and finish abutments and control joints on drawings to your office documentation policy.
- Check lead time for imported selections and consider adding a requirement, in **SUBMISSIONS**, for the builder to verify availability.

The *Normal* style text of this worksection may refer to items as being documented elsewhere in the contract documentation. Make sure they are documented.

Search acumen.architecture.com.au, the Australian Institute of Architects' practice advisory subscription service, for notes on the following:

- Guarantees and warranties.

Search www.environmentdesignguide.com.au, the Australian Institute of Architect's environmental advisory subscription service for notes on the following:

- Polyvinyl chloride (PVC).

Specifying ESD

The following may be specified by retaining default text:

- Natural and biodegradable flooring including linoleum, cork, corklinoleum and rubber.
- Zero VOC concrete substrate moisture control treatments.
- Zero VOS concrete substrate moisture control treatments.
- Increased durability of concrete substrates using concrete moisture control treatments.

The following may be specified using included options:

- Scrap recycling, finishes with programs for recycling off-cuts.

The following may be specified by including additional text:

- Recycled material, e.g. for PVC and rubber flooring.
- PVC finishes and adhesives low or no VOC emission.
- Planks or tiles not requiring underlays or adhesives, reducing materials for installation.
- Materials recyclable at the end of service life.

Refer to the NATSPEC TECHreport TR 01.

1 GENERAL

MARKHAM GLOBAL – adding life to concrete.

Markham is not just another product supplier. We offer solutions for asset owners, architects, civil engineers, construction professionals and concrete placement. We specialise in PENETRATING HYDROGEL treatments for new and existing concrete.

Markham's team is continually researching and developing products and systems that are more environmentally friendly, cost-effective, innovative, and of course easier to use.

1.1 RESPONSIBILITIES**General**

Requirement: Provide resilient floor finishes to substrates, as documented.

Documented is defined in 0171 General requirements as meaning contained in the contract documents.

AQURON: Provide AQURON 2000 HYDROGEL concrete substrate moisture control treatment beneath resilient finishes, as documented.

AQURON 2000 HYDROGEL can also be used as an internal curing agent, when applied to a freshly finished concrete surface, providing internal curing, hardening, anti-dusting and moisture control in one application.

AQURON 2000 HYDROGEL is also available in an AQURON 2000 MEDI+ variant which forms an internal and surface concrete protection to stop spills and bio-fluids penetrating concrete.

1.2 COMPANY CONTACTS**MARKHAM GLOBAL technical contacts for concrete substrate treatments**

Website: www.markhamglobal.com.au/contact-markham.

1.3 CROSS REFERENCES**General**

Requirement: Conform to the following:

- 0171 General requirements.

0171 General requirements contains umbrella requirements for all building and services worksections.

List the worksections cross referenced by this worksection. 0171 General requirements references the 018 Common requirements subgroup of worksections. It is not necessary to repeat them here. However, you may also wish to direct the contractor to other worksections where there may be work that is closely associated with this work.

NATSPEC uses generic worksection titles, whether or not there are branded equivalents. If you use a branded worksection, change the cross reference here.

1.4 STANDARDS**General**

Resilient finishes installation: To AS 1884.

Slip resistance

Classification: To AS 4586.

1.5 MANUFACTURER'S DOCUMENTS**Technical manuals for concrete substrate treatments**

AQURON website: Visit www.markhamglobal.com.au/markham-products/aquron-range/aquron-2000-waterproofing-concrete-sealer for product information and to request technical data and safety data sheets.

1.6 INTERPRETATION**Abbreviations**

General: For the purposes of this worksection the following abbreviations apply:

- SDS: Safety Data Sheet.
- TDS: Technical Data Sheet.

Edit the **Abbreviations** subclause to suit the project or delete, if not required. List alphabetically.

Definitions

General: For the purposes of this worksection the definitions given in AS 1884 and the following apply:

- Acoustic underlay: A resilient material laid between the structural floor and the flooring material to provide sound isolation.
- Resilient floor coverings classification: To EN ISO 10874.

- EN ISO 10874 classifies resilient floor coverings by level of use for domestic, commercial and industrial applications.

- Substrate: The surface to which a material or product is applied.
- Underlay: A non-structural layer of sheet material or in situ levelling material on the substrate to provide a smooth and level surface.

Edit the **Definitions** subclause to suit the project or delete if not required. List alphabetically.

1.7 SUBMISSIONS**Certification**

Resilient finishes: Submit a certificate of compliance for antistatic and conductive floor installations.

Fire performance

Fire hazard properties: Submit evidence of conformance to PRODUCTS, **FIRE PERFORMANCE**, **Fire hazard properties**.

Operation and maintenance manuals

Resilient finishes: Submit manufacturer's published use, care and maintenance requirements for each type of finish.

Products and materials

AQURON 2000 HYRDOGEL concrete substrate treatment: Submit details of:

- Evidence of adhesion compatibility with applied finishes.

If also using AQURON 2000 HYDROGEL as a curing agent on freshly finished concrete surfaces, request the submission of test certificates to show that the product has been tested as conforming to the moisture retention requirements of ASTM C309. Test certificates are available from MARKHAM GLOBAL.

Resilient finishes manufacturer's data: Submit the manufacturer's product data for each type of finish, and the manufacturer's recommendations for its application in the project including the following, as appropriate:

- Thickness and width of sheet or size of tile.
- Adhesive and jointing method.
- Resistance to wear, indentation, chemicals, light and fire.
- Flexibility and bending strength.

Type tests: Submit results, as follows:

Type tests are carried out off-site. However, submission of evidence of a successful type test may be called up here for requirements specified in SELECTIONS or PRODUCTS when there are no SELECTIONS.

- Slip resistance of resilient finishes to AS 4586.

Samples

If the specification does not state selected properties such as colour and texture, the effect of this clause is to require the submission of samples covering the full range of those properties. The specification should define the item with enough precision, either by description, or by reference to preselected samples, or as a proprietary item, to allow the contractor to identify and price it. Where the covering is specified as a proprietary item, use this clause as a means of confirmation.

Range: Submit labelled samples of resilient finishes illustrating the range of colour, pattern or texture of the product.

Minimum size per resilient finish sample:

- Sheet: 450 x 450 mm.
- Tiles: A whole tile or 0.09 m², whichever is the greater.
- Linear accessories, (including coving, skirting, stair nosing, protection strips): A piece 300 mm long.
- Welded joints: 300 mm long.

Identification: Label each resilient finish sample, with brand, product name, and manufacturer's code reference (including the code for each coat of multi-coat work).

Sample panels: Provide sample panels as follows:

- Location:
- Size (mm):

Call for sample panels only when large areas are specified. Delete if not required.

Trial set-out: Prepare a trial set-out of resilient finish before fixing.

Subcontractors

Resilient finishes: Submit names and contact details of proposed suppliers and installers.

Delete if supplier/installer details are not required.

AQURON applicator: Submit evidence from MARKHAM GLOBAL that the applicator is approved to apply AQURON 2000 HYDROGEL.

Application shall only be completed by persons who have current approval as applicators from MARKHAM GLOBAL.

Substrate acceptance

AQURON applicator: Submit evidence of applicators' acceptance of the concrete surface before commencing application of AQURON concrete substrate treatment.

Flooring: Submit the resilient finish installer's certification of the acceptability of the flooring substrate before commencing installation of the resilient finish.

Tests

0171 General requirements covers tests in **Definitions** and calls for an inspection and testing plan under **SUBMISSIONS, Tests**.

Site tests: Submit results, as follows:

- Site slip resistance test of completed resilient finish installations.
- Surface pH test.
- Moisture content test.

Detail the tests required in **PRODUCTS** or **EXECUTION**, as appropriate, and list the submissions required here.

Warranties

Resilient finishes: For each type of resilient finish specified, submit the manufacturer and installer's warranty of the material, workmanship and application.

Warranty items:

Describe the requirements of warranties in **PRODUCTS** or **EXECUTION**, as appropriate, and list the submissions required here.

AQURON: Submit details of 15 year warranty covering both the product and the application.

Discuss with MARKHAM GLOBAL. Edit, as required.

15 year warranty available on MARKHAM GLOBAL performance supervised supply and apply contracts, provided that the flooring installer follows the 5 rules and 8 precautions that MARKHAM GLOBAL nominate in their technical information.

1.8 INSPECTION

Notice

Inspection: Give notice so that inspection may be made of the following:

- Prepared concrete surface before application of AQURON 2000 HYDROGEL.
- Substrate immediately before fixing resilient finishes or underlay.
- Completed underlay, if any.
- Finished surface before applying sealers or polishes (if any).
- Completed installation.

Amend to suit the project adding critical stage inspections required.

Hold points, if required, should be inserted here.

2 PRODUCTS

2.1 GENERAL

Product substitution

Other products: Conform to PRODUCTS, **GENERAL**, **Substitutions** in *0171 General requirements*.

The *0171 General requirements* clause sets out the submissions required if the contractor proposes alternative products. Refer also to NATSPEC TECHnote GEN 006 for more information on proprietary specification.

Product identification

Resilient finish: Marked to show the following:

- Manufacturer's identification.
- Product brand name.
- Product type.
- Quantity.
- Product reference code and batch number.
- Date of manufacture.

Edit the list to suit the project or delete if not required.

2.2 FIRE PERFORMANCE

Fire hazard properties

Critical radiant flux of resilient finish: Tested to AS ISO 9239.1.

Non-sprinklered buildings: The floor finish must have maximum *smoke development rate* of 750 percent-minutes tested to AS ISO 9239.1.

Refer to NATSPEC TECHnote DES 020 for further information on fire hazard properties.

2.3 AQURON 2000 HYDROGEL CONCRETE SUBSTRATE TREATMENT

AQURON general

Description: A non-toxic, deep penetrating, waterborne colloidal silicate with a unique reactive catalyst that forms an insoluble calcium silicate hydrogel within the concrete matrix, internally controlling moisture in concrete beneath coverings and coatings.

Key Benefits:

- Permanently integrally seals concrete.
- Allows necessary vapour transmission.
- Preserves matrix integrity.
- Increases surface abrasion resistance.
- Adds density.
- Improves thermal resistance.
- Increases strength.
- Prevents internal water migration.
- Improves acid/chemical resistance.
- Lowers creep potential.
- Lowers electrostatic discharge potential.
- Allows early installation of floor coverings.

AQURON 2000 HYDROGEL is also available in an AQURON 2000 MEDI+ variant which forms an internal and surface concrete protection to stop spills and bio-fluids penetrating concrete.

Application method: Sprayed.

Shelf life: Indefinite, refer to product TDS for storage requirements.

AQURON performance

Requirement:

- Provide long-term moisture control from within the concrete matrix.
- Penetrate concrete up to a depth of 150 mm.

AQURON product properties

Physical state: Liquid.

Colour: Clear.

Odour: None.

VOC/VOS content: None.

Flash point: None.

Flammability: None.

pH: 12.

Toxicity: None.

Boiling Point: 110°C.

Freeze temperature: 0°C.

Surface bond quality: Excellent.

AQURON storage and handling

Requirement: To the AQURON 2000 HYDROGEL TDS and SDS.

AQURON warranties

Period: 15 Years.

Discuss with MARKHAM GLOBAL. Edit, as required.

15 year warranty available on MARKHAM GLOBAL performance supervised supply and apply contracts, provided that the flooring installer follows the 5 rules and 8 precautions that MARKHAM GLOBAL nominate in their technical information.

2.4 UNDERLAYS

A thin cementitious type underlay may be used as an isolating barrier of known electrical resistance beneath antistatic or conductive flooring if required. Other special underlay systems are available for the reduction of impact noise, these may be laid directly on the substrate or over an isolation pad or board, an embedded reinforcing mat is usual. Consult MARKHAM GLOBAL and the manufacturers of both underlay and floor covering for compatibility and installation requirements.

Cementitious

General: Polymer modified cementitious smoothing and self-levelling compound.

Thickness: 3 mm minimum.

Use to correct the substrate. Avoid a feather edge that may curl, by cutting back for a 3 mm minimum thickness. Delete if not appropriate.

Fibre cement underlay

Standard: To AS/NZS 2908.2, Type B, category 2 minimum.

Thickness: 5 mm minimum.

Wet processed fibreboard (hardboard) underlay

Standard: To AS/NZS 1859.4.

The NCC cites AS/NZS 1859.4:2004.

Classification: General purpose medium board, manufactured specifically as flooring underlay.

Thickness: 5.5 mm.

2.5 ADHESIVES

General

Requirement: To the resilient finishes manufacturer's recommendations.

Special adhesives may be required for antistatic and conductive applications.

2.6 SHEETS AND TILES

Edges of sheets and tiles

General: Make sure edges are firm, unchipped and machine-cut accurately to size and square to the face, and that tile edges are square to each other.

Cork tiles

Standard: To EN 12104.

Most of the cork tiles imported from Portugal are 305 x 305 mm square. Cork is not suitable for very heavy wear although densities over 450 kg/m³ may be available for heavy contract use.

Linoleum

Standard: To EN ISO 24011.

Corklinoleum

Standard: To EN 688.

Rubber

Standard:

- Smooth rubber: To EN 1817.
- Textured/relief rubber: To EN 12199.

Generally synthetic, available in various grades for specific uses e.g. where oils, fat, grease, acids and solvents are used. The surface is commonly moulded into patterns - usually raised studs. Static dissipative and static conductive grades are available for static control.

Polyvinyl chloride (PVC)

Resilient floor covering, homogeneous: To EN ISO 10581.

Resilient floor covering, heterogeneous: To EN ISO 10582.

Resilient floor covering, jute or polyester felt backing: To EN 650.

Resilient floor covering, with foam layer: To EN 651.

Resilient floor covering, with particle based enhanced slip resistance: To EN 13845.

Resilient floor covering, semi-flexible polyvinyl chloride tiles: To EN ISO 10595.

Proprietary PVC products will generally be imported and conform to overseas standards. See also NATSPEC TECHnote DES 001 on slip resistance. Consult the manufacturer on suitability for service conditions, especially for severe conditions such as underfloor heating or high humidity.

Vinyl bench topping

General: Fully flexible homogeneous sheet.

Bench or counter topping grade is available but is less durable than laminate for heavy usage. Antistatic material is available where static control is required, consult with manufacturer for special installation procedures.

Flexible terrazzo tiles

General: Marble or granite chips bedded in a flexible thermoset resin matrix, precision ground and polished.

Static control flooring

See NATSPEC TECHnote DES 007 on static control floors.

General: Unbacked flexible sheet with electrical resistance.

Sheet products with antistatic properties generally refer to static dissipative or static conductive grades that provide static control. However, some standard products will provide some degree of static control and may prove adequate.

Acoustic sheet vinyl

General: Unbacked flexible sheet vinyl laid over separate closed cell foam acoustic underlay.

Acoustic underlay thickness: 2 mm.

For built-up applications using a separate acoustic underlay, a tested system from a single manufacturer is preferable to a combination of products from different manufacturers. Single layer resilient backed sheet vinyl may provide an alternative but with a lower insulation rating.

Refer to NATSPEC TECHnote DES 027 for information on impact sound insulation.

Slip-resistant sheet vinyl

Slip resistance classification: To AS 4586.

Inlaid vinyl sheet

General: A layer of vinyl chips inlaid in a translucent vinyl matrix, bonded to a moisture resistant backing.

2.7 SYNTHETIC SPORTING SURFACES**Standard**

General: To EN 14904.

Refer to EN 12235 (ball rebound), EN 13036-4 (sliding coefficient of friction), EN 14808 (shock absorption) and EN 14809 (vertical deformation) for additional information on synthetic sporting surfaces.

3 EXECUTION**3.1 SUBCONTRACTORS****General**

Requirement: Use specialist installers recommended by the material manufacturers.

AQURON applicator: To carry applicator's approval to apply AQURON 2000 HYDROGEL.

AQURON 2000 HYDROGEL must only be applied by applicators with current approval. Contact MARKHAM GLOBAL for details of currently approved applicators.

3.2 PREPARATION**Substrates**

Resilient finishes: To AS 1884 Section 3.

Substrate tolerance table

Property	Length of straightedge laid in any direction	Max. deviation under the straightedge
Planeness	2 m	4 mm
Smoothness	150 mm	1 mm
Projections	50 mm	0.5 mm

Planeness tolerance class: Nominate Class A in the **Flatness tolerance class table** in 0315 Concrete finishes and 0612 Cementitious toppings for locations where resilient finishes are to be installed, as appropriate for the project. It is assumed smoothness and projection tolerance corrections form part of substrate preparation.

AQURON 2000 HYDROGEL treatment and concrete substrate preparation

Refer to NATSPEC TECHnote DES 008 on the preparation of concrete substrates. Refer also to CCAA Data Sheet Moisture in concrete and moisture-sensitive finishes and coatings.

Preparation: Clean, by mechanical means if necessary, the concrete substrate surface so it is free of any dirt, water, or any residues of sodium silicates, acrylic curing compounds, release agents, paint, adhesives, dust, plaster or other coatings.

Grinding of concrete prior to application of AQURON 2000 HYDROGEL may be required. AQURON 2000 HYDROGEL must be applied before any final substrate finishing, such as floor levelling compounds, as it will not penetrate any such products.

AQURON application: Conform to the requirements of the AQURON 2000 HYDROGEL TDS and the following:

- Protect adjacent surfaces, such as glass or aluminium, from overspray or splashing during application.

Contact with adjacent glass or aluminium may cause adjacent surface to etch, dull, distort or discolour.

- Do not proceed with application if the ambient temperature is below 3°C, or forecast to be below 3°C in the next 6 hours or if the concrete surface temperature is above 35°C. Cool concrete surface with chilled water if necessary and disperse any pooled water on surface prior to application. Do not apply during wet weather.
- Apply AQURON 2000 HYDROGEL at a maximum rate of 4.5 m² per litre using a high pressure airless sprayer with .013, 25 degree fan tip for steel trowelled smooth concrete surfaces and .017-.019 tip for porous or weathered concrete surfaces.

- Apply to the point of concrete saturation twice, which is the point where runoff is about to occur, in back to back applications. The second application is applied to the surface whilst it is still damp from the first application. Do not allow the surface to dry from the first application before starting the second application.
- Begin application at the lowest point of any slab or at the bottom of a wall or steep slope.
- Spray apply to point of concrete saturation in a fan spray pattern, holding spray tip 200 – 300 mm from concrete surface, overlapping each pass, until the full treatment area has been covered.
- Return to start of treatment area and apply second application, at an angle of 90 degrees to the first application, when the first application has been absorbed (surface has lost its sheen) and before the surface has dried completely.
- Where oils or contaminants are purged to the surface after application, remove them from surface, using methods as required, whilst still soluble or alternatively as they begin to dry out.

Method to be determined on site, such as progress sander with vacuum, grinding, shot blasting, scraping, etc.

- Immediately treat any oversprayed adjacent surfaces by flushing with clean water and clean all tools and equipment with water and mild soap immediately after use.

Concrete substrate rectification: Conform to the following:

- Planeness, smoothness, projections: Remove projections and fill voids and hollows with a smoothing and self-levelling compound compatible with the adhesive a minimum of 72 hours after the application of AQURON 2000 HYDROGEL. Allow filling or levelling compound to dry to manufacturer's recommendations.

Changes in the design mix of concrete, admixtures and concrete surface finishing techniques, and low VOC adhesives have contributed to increased failure of resilient finishes. Consult the flooring manufacturer.

Cleaning: Remove loose materials or dust.

Working environment

Resilient finishes: Do not start work before the building is enclosed, wet work is complete and dry, overhead work is complete and good lighting is available. Protect adjoining surfaces.

Conditioning

Resilient finishes: Stabilise the room temperature for seven days before, and two days after, installation of resilient finishes, as follows:

- Areas with air conditioning installed: Run air conditioning at operational temperature.
- Air conditioned areas not operational: Maintain an ambient room temperature range of 15°C to 28°C.
- Non-air conditioned areas: Install at an ambient room temperature range of 15°C to 28°C.
- Underfloor heating: Turn off heating and allow substrate to stabilise at the temperature recommended by the manufacturer.

Underlay: Expose both faces of each sheet for at least 24 hours before fixing.

Resilient sheet and tile floor coverings: Stack for at least 48 hours before installation.

3.3 RESILIENT FINISHES INSTALLATION

Before installation

Timing: Do not start installation of the resilient finishes for a minimum of 72 hours after application of AQURON 2000 HYDROGEL and until the concrete substrate conforms to the adhesive and resilient finish manufacturers' recommendations and the requirements of AS 1884 clause 3.1, except for the relative humidity requirements of that clause.

AS 1884 sets out minimum requirements for surface pH, moisture content and planeness and smoothness of the concrete substrate which should be determined by inspection and testing. The manufacturer's recommendations may exceed these requirements. This worksection requires submission of test results.

When AQURON 2000 HYDROGEL treated concrete is encapsulated under floor coverings and coatings, even though the concrete may have elevated moisture levels above 75% RH, MARKHAM GLOBAL guarantees that AQURON 2000 HYDROGEL will eliminate the risk of moisture migration from within or through the concrete. 'Free' moisture within the AQURON 2000 HYDROGEL treated concrete is immobilized, it is not removed.

AQURON rules and precautions: Conform to the 5 rules and 8 precautions detailed on the AQURON 2000 HYDROGEL TDS before installation of resilient finishes.

The 5 rules and 8 precautions are to be complied with for MARKHAM GLOBAL to guarantee the product.

Sheet set-out

General: Set out sheets to give the minimum number of joints. Position joints away from areas of high stress. Run sheet joints parallel with the long sides of floor areas, vertically on non-horizontal surfaces.

Tile set-out

General: Set out tiles from centre of room. If possible cut tiles at margins only, to give a cut dimension of at least 100 mm x full tile width. Match edges and align patterns. Arrange the tiles so that any variation in appearance is minimised.

Amend text if tile layout and joints have been documented.

Joints

Non-welded: Butt edges together to form tight neat joints showing no visible open seams.

Delete if joints are welded.

Junctions

General: Scribe neatly up to returns, edges, fixtures and fittings. Finish flush with adjoining surfaces.

Rolling

General: If rolling is required, roll the finish in multiple directions before the adhesive sets.

Roller size: [complete/delete]

e.g. Linoleum 65 kg, LVT (Luxury vinyl tiles) 45 kg, VCT (Vinyl composite tiles) 68 kg.

Change of finish

General: Maintain finished floor level across changes of floor finish including carpet.

Cleaning

General: Keep the surface clean as the work proceeds.

Finishing schedule

Sheet and tile type	Finish	Rolling after laying

Finish: e.g. Buffable water emulsion polish, Two-pack clear polyurethane (cork); Buffable metallised emulsion polish, Buffing only for slip-resistant sheet (PVC); Two coats buffable metallised emulsion polish (cushion backed sheet vinyl).

Scrap recycling

Participating supplier: [complete/delete]

Some manufacturers will recycle site scrap vinyl of their own brand.

3.4 TILING**Cork tiles**

Laying: Provide a water-based latex adhesive. Do not use pins.

Finishing: Sand after laying.

Cork tiles can be sealed or given a clear finish. Two-pack polyurethane will give the floors a harder finish with some loss of resilience. Coordinate with 0671 Painting.

Rubber tiles

General: Keep tiles flat during storage. Before laying, allow the tiles to relax and decompress, and make sure that the backs are free of loose material.

Adhesive: Provide as follows:

- Horizontal surfaces: Solvent-free epoxy mechanically mixed. Use only within the limit of the adhesive pot life.
- Stair skirtings, stop ends, external mouldings and vertical surfaces: Neoprene contact adhesive applied to both the tile or accessory and the substrate surface. Fix when both surfaces are touch dry.

Laying: Lay tiles in stretcher bond. Match edges and align joints and studs. Make sure the whole surface of the tile or accessory is in contact with the substrate.

Stretcher bond reduces the possibility of the tiles lifting at the point where the four corners join. Chequerboard may be preferred otherwise.

Stair finish: Provide as follows:

- Smallest tiles: Half tile.
- Nosing tiles: Purpose-made matching tread, nosing and riser tile. Accurately scribe, cut and fit to perimeters. Close butt seams.

Rubber nosing tiles are an alternative to forming standard tiles to radius. Proprietary anti-slip PVC or aluminium, or PVC combined riser, nosing and tread are also available. Stair stringer profile with tapered edge is available in 300 mm width.

Finishing: Sweep, vacuum, and wash using clean warm water and household soap only, to remove foreign matter, including protective wax coating. Buff when dry. Provide a suitable polish if recommended in conjunction with buffing.

3.5 SHEETING

Welded joints

Select from the alternatives and document in the **Welded joints schedule**.

Heat welding: After fixing, groove the seams using a grooving tool and weld the joints with matching filler rod, using a hot air welding gun. When the weld rod has cooled, trim off flush.

Heat welding was developed specifically for homogeneous sheet. It may be used for vinyl chip sheet but will be more conspicuous than cold welding and will not have the same strength as heat welding in homogeneous sheet.

Chemical welding: Apply seaming compound 100 mm wide to the substrate centrally under the seam. Roll the seam until the compound is forced up into the joint. Clean off flush with a damp cloth.

Is less conspicuous and may be preferable for that reason.

Epoxy jointing: Join seams with epoxy adhesive.

For slip-resistant vinyl sheet.

Welded joints schedule

Sheet and tile type	Welding type

Conductive flooring

General: Install conductive sheet on a copper grid comprising copper tape 80 µm thick x 10 mm wide adhered to the floor with conductive adhesive. Lay copper tape along each length of sheet vinyl and connect it at right angles to a 1 MΩ resistor. Connect to earth with copper tape at 20 to 30 m² intervals.

Provide an earthing system if electrical resistance to earth or a conductive floor is required. The earthing grid will consist of metallic strips laid directly under the flooring material, connection to building is made by a qualified electrician – a backup connection is recommended. Metal fixtures and fittings should be isolated from the flooring. Additional requirements, e.g. earthing rails, placement of switches and outlets outside the area, atmosphere ionisation and humidity controls may be required. Include these under the relevant worksection.

3.6 VINYL STAIR FINISH

General

Preformed: Provide purpose-made vinyl stair finish combining riser, nosing and tread in the one element. Lay each step consecutively with the joint at the bottom of each riser.

Formed in situ: Fit the sheet vinyl to each tread, and to the riser above, in one piece, coved in the angle. Accurately scribe, cut and fit to stair nosings and perimeters.

3.7 JOINTS AND ACCESSORIES

At areas of heavy use, particularly with wheeled traffic, consider specifying a prototype test for the joint product installation using the anticipated wheeled equipment.

Junctions

General: Finish junctions tapered to with adjoining surfaces. Where changes of floor finish occur at doorways, locate the joint on the centreline of the closed door leaf.

If the floor finish is to be divided into bays, specify here the bay size, dividing strip or joint filler.

Accessories

General: Provide purpose-made matching moulded accessories for nosings, coves, skirtings, edge cover strips and finishes at junctions, margins, and angles, if available. Otherwise, form accessories from the sheet material. Provide solid backing for radiused coves and nosings.

Accessories schedule

Accessory type	Location

Accessory type: Specify required accessories, such as nosings, wedge fillets, tile edge trim, wall and capping trim and state whether they are to be a proprietary item, purpose-made or formed.

For floor wastes to wet areas consult with manufacturer for special requirements, e.g. flanged fittings to clamp over finish, and coordinate with **SANITARY DRAINAGE** in 0822 Wastewater.

Edge strips

General: Provide edge cover strips at junctions with different floor finishes and to exposed edges.

Metal cover strip: Extruded tapered strip 25 mm wide, of the same thickness as the sheet or tile. Fix with matching screws to timber bases or to masonry anchors in concrete bases, at 200 mm maximum centres.

Material: [complete/delete]

Material: e.g. Brass, Stainless steel or Aluminium.

PVC cover strip: Feather edge strip matching the floor finish, fixed with contact adhesive.

Width (mm): [complete/delete]

Width: e.g. 25 mm, 50 mm.

Colour: [complete/delete]

Control joints

Location: Provide control joints as follows:

- Over structural control joints.
- At junctions between different substrates.

Depth of joint: Right through to the substrate.

Sealant width: 6 to 25 mm.

Depth of elastomeric sealant: One half the joint width, or 6 mm, whichever is the greater.

Control joint materials – sheet flooring

Proprietary slide plate divider strip: Provide interlocking metal plates grouted into pockets formed in the concrete joint edges to finish flush with the flooring surface.

Control joints schedule – proprietary slide plate

Property	CJ1	CJ2	CJ3
Location			
Product			
Material			
Insert colour			

Location: State here or show on drawings.

Proprietary slide plate:

- Nominate the product type suitable for the anticipated movement.
- Material: e.g. Stainless steel.
- Insert colour: Nominate colour or omit if there is no insert.

Vinyl skirting

Select from the following.

Feather edge: Moulded PVC skirting section.

Intended for use with PVC or similar flat surface floor finishes. It provides coverage of floor termination at the vertical surface. Occasionally used where partitions are retro fixed over carpet.

Flat skirting: Flat PVC skirting section.

Intended for use with carpet. It provides a solid margin to assist the carpet laying process. Skirtings may be cut from sheet material but are more costly.

Pre-formed vinyl coving: [complete/delete]

Select sit-on or set-in. Sit-on is surface mounted after the floor material is laid.

Fixing: Scribe as necessary. Mitre corners. Fix to walls with contact adhesive.

Minimum height: 100 mm.

Rubber covered skirtings and margins

General: Form from smooth flat sheet matching the colour and total thickness of the rubber flooring. Scribe and mitre at internal corners.

External corners and stop ends: Provide purpose-made matching moulded pieces.

If moulded pieces are not available to match the rubber floor finish, consider using vinyl skirtings.

Coved skirtings

Provide where a continuous surface is required e.g. Wet areas, Wet mopping, Hygiene and clean rooms. A sealant or cover mould may be necessary where the wall finish joins the door jamb profile. The width may require special consideration to provide a sealed overlap where the coving terminates at the door jamb.

Site formed coving: Carry the flooring material up over a profiled coving section to form the skirting and mitre and weld all joints. Make sure the radius of the coving section conforms to the floor finish manufacturer's recommendations for sheeting material and thickness.

If using a contrasting border, document in the **Sheet and tile schedule**.

Location: [complete/delete]

State location if not shown on the drawings.

3.8 TESTING

Documented is defined in 0171 *General requirements* as meaning contained in the contract documents.

Substrate tests

Surface pH: Test concrete subfloor for suitability for the installation of resilient floor coverings to AS 1884 Appendix B.

- Maximum pH: 10.

Testing of pH should be carried out after any surface grinding. Freshly exposed concrete has high alkalinity and problems have been encountered overseas.

AQURON 2000 HYDROGEL solution in the pail has a high pH level. Applied to concrete, AQURON 2000 HYDROGEL penetrates into the concrete porosity and chemically forms a (Calcium Silicate Hydrate) Hydrogel. Calcium Silicate Hydrate is the main binder of concrete. Providing the AQURON 2000 HYDROGEL has completely penetrated, and the concrete surface has been made absorbent as per the AQURON 5 rules and 8 precautions prior to flooring compounds and adhesives being installed, the surface pH levels will be similar to the untreated concrete.

Moisture content: Test substrate for suitability for the installation of resilient floor coverings to AS 1884 Appendix A.

- Maximum relative humidity of concrete: To AS 1884 Appendix A3.1.2 and A3.1.3.

Some manufacturers may provide products which can be used on concrete slabs with a moisture content greater than the maximum allowed by AS 1884, or that require a moisture content less than the maximum allowed by AS 1884.

AQURON 2000 HYDROGEL controls moisture inside the concrete porosity, it does not remove moisture. Therefore AQURON 2000 HYDROGEL treated concrete will have measurable relative humidity (RH). AQURON 2000 HYDROGEL moisture control is guaranteed regardless of measurable RH % in the concrete providing the AQURON 5 rules and 8 precautions are followed. When AQURON 2000 HYDROGEL treated concrete is encapsulated under floor coverings and coatings, even though the concrete may have elevated moisture levels above 75% RH, MARKHAM GLOBAL guarantees that AQURON 2000 HYDROGEL will eliminate the risk of moisture migration from within or through the concrete. 'Free' moisture within the AQURON 2000 HYDROGEL treated concrete is immobilized, it is not removed

Completion tests

Slip resistance testing of completed resilient finish installation: To AS 4663.

Delete if not required.

3.9 COMPLETION

Protection of sheet materials

Finished floor surface: Keep traffic off floors for a minimum of 24 hours after laying or until bonding has set, whichever period is the longer. Avoid contact with water for minimum 7 days after laying.

Reinstatement

Resilient finish: Repair or replace faulty or damaged work. If the work cannot be repaired satisfactorily, replace the whole area affected.

Cleaning

Consult resilient finish manufacturers for cleaning instructions and recommendations on polishing. Polyurethane reinforced vinyls do not require sealing or polishing (they are mopped and dry buffed), and other vinyl floors only require mopping. For installations in existing buildings, consult the building user on current maintenance procedures, type of polish used, and make the new installations compatible as far as possible.

Resilient finish: Clean the finished surface. Buff and polish. Before the date for practical completion, mop and leave the finished surface clean and undamaged on completion.

Cleaning static control resilient finishes

General: Do not use sealers, wax or floor polish. Clean using a mild neutral detergent and lukewarm water. Dry buff clean floor using a scrubbing machine with a white nylon pad.

Sealers and polishes affect or destroy the antistatic properties.

Spare materials

Resilient finishes: Supply spare matching resilient finishes and accessories of each type for future replacement purposes. Store the spare materials on site where directed.

Quantity: At least 1% of the quantity installed.

Spare material schedule

Material	Quantity	Storage location

4 SELECTIONS

Schedules are a way of documenting a selection of proprietary or generic products or systems by their properties. Indicate their locations here and/or on the drawings. Refer to NATSPEC TECHnote GEN 024 for guidance on using and editing schedules.

4.1 PRODUCT SCHEDULES

Sheet and tile schedule

Property	RF1	RF2	RF3
Type			
Form			
Colour			

Property	RF1	RF2	RF3
Pattern			
Tile laying pattern			
Sheet width (mm)			
Thickness (mm)			
Vinyl chip size (mm)			
Surface			
Slip resistance classification			
Tactile indicators: Directional: Product			
Tactile indicators: Directional: Colour			
Tactile indicators: Warning: Product			
Tactile indicators: Warning: Colour			
Critical radiant flux			
Tile dimensions (mm)			
Underlay			
Skirting			

RF1, RF2, RF3: These designate each instance or type or location of the item schedule. Edit to align with the project's codes or tags.

Edit codes in the **Schedule** to match those on drawings.

Much of the scheduled information will be unnecessary if resilient finishes are specified by proprietary items.

Include any particular requirements not otherwise specified, such as resistance to wear, indentation, chemicals, light or fire. Consult the manufacturer.

Type: e.g. Linoleum, Cork, Rubber, Vinyl (PVC), Antistatic vinyl, Conductive vinyl, Cushion backed vinyl, Vinyl counter topping.

Form: e.g. Sheet or Tile (Vinyl, linoleum, cork, rubber); Unbacked flexible sheet, Semi-rigid floor tiles, Flexible floor tiles, Inlaid vinyl sheet (PVC).

Pattern: e.g. Marbled or Plain (Linoleum, PVC).

Tile laying pattern: e.g. Checkerboard or Stretcher bond.

Thickness: e.g.:

- For cork: 4.75 mm or 6.3 mm (6.3 mm is recommended for concrete floors).
- For rubber: 2.7, 4, 5, or 6 mm.
- For flexible terrazzo tiles: 4.76 mm.
- For flexible PVC sheet or tiles: 1.5, 2, 2.5 or 3 mm.
- For semi-rigid PVC tiles: 1.5, 2, 2.5, or 3 mm.
- For linoleum sheet or tiles: 2 or 2.5 mm.

Surface:

- For cork: Smooth surface only.
- For rubber: May be smooth, textured, or studded. For studded sheet or tile state form and profile of studs. Consult manufacturer for available forms.
- For PVC: Normally smooth surface, but various textured or inlaid slip-resistant surfaces are available. Semi-rigid tiles may have a factory-applied protective coating. Consult the manufacturer for details of the available surfaces.

Slip resistance classification: Refer to NATSPEC TECHnote DES 001, SA HB 197 and SA HB 198. Select the slip resistance test and classification to suit the location and application.

Tactile indicators: To AS/NZS 1428.4.1.

- Tactile indicator: Directional: colour: A colour contrast is required, in both wet and dry conditions, between the tactile indicators and the adjacent surface and that the colour provides a luminance contrast to the surrounding surface to AS/NZS 1428.4.1 Appendix E.

Critical radiant flux: Include the appropriate value from BCA Spec C1.10 Table 2 for the building class.

Tile dimensions: 300 x 300 mm is standard size for PVC tiles and 305 x 305 mm for Portuguese cork tiles. Rubber tiles are usually 1000 x 1000 mm or 500 x 500 mm. Consult the manufacturer for available sizes and thicknesses.

Underlay: e.g. Trowelled, Hardboard, Fibre cement sheet. Consult manufacturers of resilient flooring for recommended underlay for particular applications. State thickness.

Skirting: e.g. Feather edge, Flat or coved vinyl, Coved rubber, or Site formed coving.

AQURON 2000 HYDROGEL concrete substrate treatment schedule

Property	A	B	C
Product name			
Treatment area (m ²)			

A, B, C: These designate each instance or type or location of the item scheduled.

Edit these codes in the **Schedule** to match those on drawings.

Product name: Enter either AQURON 2000 or AQURON 2000 MEDI+.

Treatment area: Enter the total surface area of concrete to be treated in square meters.

Synthetic sporting surfaces schedule

Property	SS1	SS2	SS3
Type			
Sport/activity			
Underlay			
Surface product			
Skirting			
Critical radiant flux			
Slip resistance classification			
Surface marking method			

SS1, SS2, SS3: These designate each instance or type or location of the item schedule. Edit to align with the project's codes or tags.

Edit codes in the **Schedule** to match those on drawings.

Type: e.g. Indoor or Outdoor.

Sport/activity: e.g. aerobics, gymnastics, badminton, fencing.

Underlay: Consult the manufacturer of the proprietary surface for recommendations as to the need for, and type of, underlay.

Skirting: e.g. feather edge, flat or coved vinyl, coved rubber, or site formed coving.

Critical radiant flux: Include the appropriate value from BCA Spec C1.10 for the building class.

Slip resistance classification: Refer to NATSPEC TECHnote DES 001, SA HB 197 and SA HB 198.

Surface marking method: e.g. Inlaid or interwoven material with contrasting colour, paint, tape (self-adhesive).

REFERENCED DOCUMENTS

The following documents are incorporated into this worksection by reference:

AS/NZS 1859		Reconstituted wood-based panels - Specifications
AS/NZS 1859.4	2018	Wet-processed fibreboard
AS 1884	2012	Floor coverings - Resilient sheet and tiles - Installation practices
AS/NZS 2908		Cellulose-cement products
AS/NZS 2908.2	2000	Flat sheets
AS 4586	2013	Slip resistance classification of new pedestrian surface materials
AS 4663	2013	Slip resistance measurement of existing pedestrian surfaces
AS ISO 9239		Reaction to fire tests for floor coverings
AS ISO 9239.1	2003	Determination of the burning behaviour using a radiant heat source

EN 650	2012	Resilient floor coverings. Polyvinyl chloride floor coverings on jute backing or on a polyester felt backing or on polyester felt with polyvinyl chloride backing. Specification
EN 651	2011	Resilient floor coverings. Polyvinyl chloride floor coverings with foam layer. Specification
EN 688	2011	Resilient floor coverings. Specification for corklinoleum
EN 1817	2010	Resilient floor coverings - Specification for homogeneous and heterogeneous smooth rubber floor coverings
EN ISO 10581	2012	Resilient Floor Coverings - Homogeneous Poly (Vinyl Chloride) Floor Covering - Specifications
EN ISO 10582	2017	Resilient Floor Coverings - Heterogeneous poly(vinyl chloride) floor covering - Specifications
EN ISO 10595	2012	Resilient floor coverings. Semi-flexible/ vinyl composition (VCT) poly(vinyl chloride) floor tiles. Specification
EN ISO 10874	2012	Resilient textile and laminate floor coverings. Classification
EN 12104	2000	Resilient floor coverings. Cork floor tiles. Specification
EN 12199	2010	Resilient floor coverings. Specifications for homogeneous and heterogeneous relief rubber floor coverings
EN 13845	2017	Resilient floor coverings - Polyvinyl chloride floor coverings with particle based enhanced slip resistance - Specification
EN 14904	2006	Surfaces for sports areas - Indoor surfaces for multi sports use - Specification.
EN ISO 24011	2012	Resilient floor coverings- Specification for plain and decorative linoleum
The following documents are mentioned only in the <i>Guidance text</i>:		
AS 1428		Design for access and mobility
AS/NZS 1428.4.1	2009	Means to assist the orientation of people with vision impairment - Tactile ground surface indicators
AS/NZS 1859.4	2004	Wet-processed fibreboard
SA HB 197	1999	An introductory guide to the slip resistance of pedestrian surface materials
SA HB 198	2014	Guide to the specification and testing of slip resistance of pedestrian surfaces
BCA Spec C1.10	2016	Fire resistance - Fire hazard properties
CCAA Data Sheet MC	2007	Moisture in concrete and moisture-sensitive finishes and coatings
NATSPEC DES 001	2016	Slip resistance performance
NATSPEC DES 007	2007	Static control floors
NATSPEC DES 008	2015	Preparation of concrete substrates
NATSPEC DES 020	2011	Fire behaviour of building materials and assemblies
NATSPEC DES 027	2016	Impact sound insulation
NATSPEC GEN 006	2007	Product specifying and substitution
NATSPEC GEN 024	2015	Using NATSPEC selections schedules
NATSPEC TR 01	2018	Specifying ESD
EN 12235	2013	Surfaces for sports areas. Determination of vertical ball behaviour.
EN 13036		Road and airfield surface characteristics. Test methods.
EN 13036-4	2011	Method for measurement of slip/skid resistance of a surface. The pendulum test.
EN 14808	2005	Surfaces for sports areas - Determination of shock absorption
EN 14809	2005	Surfaces for sports areas - Determination of vertical deformation